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ABSTRACT

An instrument to measure student reports of perceived teacher invitations and of teacher behaviors traditionally considered effective was developed and validated. Invitational (I-type) factors and effective (E-type) factors were correlated with academic achievement. Scale items were suggested by the literature, and then rated and categorized by expert judges. The revised instrument identified five factors: Caring, Respect, Course Organization, Interpersonal Contact, and Learning Environment. The first two factors identified I-Type teacher behaviors, the latter three identified E-Type behaviors. The reliable and valid instrument, containing 26 I-Type and 24 E-Type items was administered to technical college students. Significant positive relationships were found between: (1) I-Type and E-Type teacher behaviors as perceived and reported by students; (2) teacher behaviors and student reports of course grades; (3) teacher behaviors and student reports of how hard they worked in the course; (4) teacher behaviors and student reports of how much they learned in the course; and (5) teacher behaviors and type of curriculum taught. Students perceived general education instructors as higher I-Type and E-Type teachers than technical education instructors. Test items are included.
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THE DEVELOPMENT AND VALIDATION OF AN INSTRUMENT TO ASSESS TEACHER INVITATIONS AND TEACHER EFFECTIVENESS AS REPORTED BY STUDENTS IN A TECHNICAL AND GENERAL POST-SECONDARY EDUCATIONAL SETTING

by

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The purposes of this study were (1) to develop and validate an instrument to measure student reports of perceived teacher invitations and perceived teacher behaviors traditionally considered effective by authoritis, (2) to subject the instrument to statistical procedures for validation, and (3) to correlate identified invitational (I-Type) factors and effective (E-Type) factors with academic achievement, determined by scudent reports of grades earned, how hard they worked and how much they learned.

Items for the scale were identified from the literature and research on effective and invitational teaching. The

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instrument was then subjected to expert judges to rate each variable as to the type of teaching behavior.

All items were subjected to item analysis to determine the reliability of the scale by its internal consistency scores. The instrument was then subjected to factor analysis, a second rating by expert judges, and a final test for internal consistency by item analysis. The revised instrument identified five discriminate factors which the investigator labeled "Caring," "Respect," "Course Organization," "Interpersonal Contact," and "Learning Environment." The first two factors, caring and respect, identified I-Type teacher behaviors. The final three factors, course organization, interpersonal contact, and learning environment, identified E-Type teacher behaviors.

The reliable and valid instrument of twenty-six I-Type and twenty-four E-Type items (fifty total items) was utilized to confirm or disconfirm the five null hypotheses. The results are described below:

(1) There is a significant positive relationship between I-Type and E-Type teacher behaviors as perceived and reported by students.

(2) There is a significant positive relationship between teacher behaviors (I-Type and E-Type) and student reports of grades earned in the course.

(3) There is a significant positive relationship between teacher behaviors (I-Type and E-Type) and student

reports of how hard they worked in the course.

(4) There is a significant positive relationship between teacher behaviors (I-Type and E-Type) and student reports of how much they learned in the course.

(5) There is a significant positive relationship between teacher behaviors (I-Type and E-Type) and the type of curriculum teachers taught. Students perceived general education instructors as higher I-Type and E-Type teachers than technical education instructors.

The research indicates that teachers by their behavior create an academic environment that have a significant impact on the academic achievement of the students.

CHAPTER I

PROBLEM

Introduction

Despite the extensive research on characteristics of effective, successful teachers (Biddle, 1964; McNeil & Popham, 1973; Popham, 1974), pedagogical skills have rarely been measured with any great degree of accuracy. Teachers at all levels of education have been selected, employed, evaluated and promoted or dismissed without clear knowledge of how well they can teach. Further, skills and personality characteristics of the teacher that enhance the teaching process have not been measured successfully (Brophy & Evertson, 1976).

Teacher effectiveness has traditionally been associated with teacher behaviors endorsed by authorities in the teaching profession. These behaviors include careful lesson planning (Brethower, 1973a), the use of behavioral objectives (Bloom, 1964), the ability to organize the learning environment (Hildebrand, 1973), the proper application of learning theory (Brethower, 1973a), the display of democratic teaching styles, the efficient presentation of subject matter, the display of flexibility in the teaching situation (Brophy & Good, 1974) and the use of fair and

objective evaluation procedures (Romine, 1974). In addition, teachers typically are evaluated on their immediate, short-term gains in student achievement (Brophy & Evertson, 1976).

The past two decades have produced evidence, reviewed by Purkey (1970) that the academic experience of students has considerable influence on development of their self concepts. Further, self concepts appear to be significantly related to academic achievement. As students develop beliefs about their abilities, these abilities influence their academic achievement.

Purkey (1976a) has encouraged educators to address the effect of their behaviors on student self concepts. He has introduced to educators the notion that subtle and overt encouragements and discouragements students receive in the school environment affect their self concept and their academic achievement. Therefore, creating an atmosphere in the classroom that promotes adequate, healthy self concepts should enhance the likelihood of learning.

Combs and Snygg (1959) describe people with adequate self concepts as those who perceive themselves in essentially positive ways, are capable of accepting themselves and others, and perceive themselves as closely identified with others. These students with adequate self concepts would not feel compelled to defend their self, would be more open to total experiences and freer to choose alternatives for personal growth.

To promote adequate self concepts, Purkey (1976a) has suggested a model of teaching based on "invitations." According to Purkey, invitations consist of all the verbal and nonverbal messages transmitted to students by their school environment that communicate to them they are valuable, responsible, and able to learn. While all teachers invite, those who extend the most powerful invitations are those who have high regard for the autonomy, value and ability of students. Their invitations are genuine, they are authentic with themselves and with students, and have acquired the skill of listening with care (Purkey, 1976a). Purkey refers to those teachers as "invitational teachers."

Many educators (Silberman, 1970; Holt, 1969; Illich, 1970) have highly criticized the learning environment in the American educational system. Holt (1969) states as a description of the learner as a result of the educational experience that "He comes to feel that learning is a passive process, something that someone else does <u>to</u> you, instead of something you do <u>for</u> yourself" (Holt, 1969, p. 18).

In contrast to this description, John Steinbeck speaking of a former teacher, touches on her "invitations," her transmitted messages to students that encourage them to learn:

> She aroused us to shouting, book-waving discussions. We never could stick to ... the chanted recitation of memorized phyla. Our speculation ranged the world. She breathed curiosity into us

> so that we brought in facts or truths shielded in our hands like captured butterflies ... I have had many teachers who told me soon forgotten facts, but only three who created in me a new thing, a new attitude, a new hunger. (Baughman, 1963, p. v.)

These invitations that student encounter in the classroom appear to have a significant effect on the learning process. The question is how to measure this phenomenon. Until this time, primary reliance for measurement has been on short-term, readily identifiable traits (Brophy & Evertson, 1976).

Problem Statement

The purposes of this study were (1) to develop and validate an instrument to measure student reports of perceived teacher invitations and perceived teacher behaviors traditionally considered effective by authorities, (2) to subject the instrument to statistical procedures for validation, and (3) to correlate identified invitational (I-Type) factors and effective (E-Type) factors with academic achievement, as determined by student reports of grades earned, how hard they worked and how much they learned.

The above objectives were tested with general education and technical education instructors in a post-secondary educational setting.

Significance of the Study

Teachers are often hired and evaluated on the basis of their in-depth knowledge of the subject. Yet teaching requires more than subject knowledge. This knowledge must be transmitted in an efficient, effective and humane educational process (Combs et al., 1971). It was the task of this research to develop an instrument to measure two types of teacher behaviors that are assumed to promote learning: (1) the traditional E-Type methods of teacher effectiveness and (2) I-Type methods of extending invitations.

By developing an instrument that could be used to measure both teacher effectiveness (E-Type) and teacher invitations (I-Type), it could then be used not only as a measure of pedagogical skills, but also as a diagnostic tool for formative and summative evaluation as a means of assisting teachers for improvement.

Objectives of the Study

The following objectives were identified to provide direction for the study:

(1) To develop items to measure traditionally accepted E-Type effective teacher behaviors.

(2) To develop items to measure I-Type invitational teacher behaviors.

(3) To test the instrument for internal consistency by the Kuder-Richardson item analysis procedure.

(4) To subject the items to factor analysis for identifying underlying pattern among the variables.

(5) To test the revised instrument for internal consistency by an item analysis procedure.

(6) To correlate teacher factor scores by use of the Pearson product-moment correlation.

(7) To correlate teacher factor scores with grades students received by use of the correlation ratio.

(8) To correlate teacher factor scores with student reports of how much they learned in the course by use of the correlation ratio.

(9) To correlate teacher factor scores with student reports of how hard they worked in the course by use of the correlation ratio.

(10) To correlate teacher factor scores with the type of curriculum by use of the point-biserial correlation.

Operational Hypotheses

The following operational hypotheses written in null form were tested to meet objectives six through ten of the study:

(1) Hypothesis I: There are no relationships among the teacher factor scores on the instrument.

(2) Hypothesis II: There are no relationships between teacher factor scores and student grades.

(3) Hypothesis III: There are no relationships between teacher factor scores and student reports of how hard they worked in the course.

(4) Hypothesis IV: There are no relationships between teacher factor scores and student reports of how much they learned in the course.

(5) Hypothesis V: There are no relationships between teacher factor scores and the type of curriculum.

Definition of Terms

A number of terms will be used in accordance with the following operational definitions:

(1) IN Scale refers to the "Inviting-Noninviting" Scale that the investigator developed to measure I-Type and E-Type teaching. The IN Scale is described in Chapter IV.

(2) I-Type Teachers refer to those teachers who scored above the median on Factor I and above the median on Factor II of the instrument developed in this study as described in Chapter III.

(3) E-Type Teachers refer to those teachers who scored above the median on Factors III, IV, and V of the instrument developed in this study as described in Chapter III.

(4) General refers to the courses in Basic Sciences, Behavioral Sciences and Communication Skills taught by the teacher.

(5) Technical refers to the courses in the Health, Engineering, Social Service, and Business Technologies taught by the teacher.

(6) Academic achievement is defined by three elements: the grade the student received; how hard the student reported working; and how much the student reported learning.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

For many years educators have addressed themselves to the issue of teacher effectiveness (Morsh & Wider, 1954; Barr et al., 1953). The initial primary concern was to develop criteria that administrators could use for hiring, promoting, or dismissing teachers, and for planning or improving teacher education programs (Barr et al., 1953).

Educational research relating to teacher effectiveness had its first impetus in trying to identify traits, competencies, and behaviors that teachers exhibited enabling them to be effective (Fattu, 1962). In the Encyclopedia of Educational Research (1950), Sanford and Trump stated that a valid and reliable criterion of successful teachers had not yet been found, and that perhaps the most important factors were the teacher's personality, scholarship, and intelligence. Unfortunately, traits were difficult to define, and few studies revealed consistent findings (Getzels & Jackson, 1963).

Further research was directed towards observation techniques (Ryans, 1960; Flanders, 1969). In 1960, Mitzel

reported in the Encyclopedia of Educational Research (Mitzel, 1960, p. 1485) that there was a need for precise research on teacher effectiveness. By 1969 Flanders could report:

> The research which is reviewed herein permits cautious optimism and indicates that the tools long needed for the analysis of the teacher-learning process are gradually being developed. In the past decade ... research has begun to relate certain teacher behaviors to specific consequences in the climate of the classroom and in the academic achievement of pupils. (Flanders, 1969, p. 1423)

During the 1960's there appeared to be a growth in concern for self concepts of students in the educational environment. With this concern, research and writings were directed toward the influence the academic environment had on the self concept, which in turn affected school achievement (Coopersmith & Silverman, 1969; Aspy, 1969).

To develop an instrument to help meet the needs of a several-decade problem, the investigator reviewed literature on characteristics of effective teaching as traditionally conceptualized, and a newer, perceptual psychological model identified by Purkey (1976a, 1976b) as invitational teaching.

Traditional Criteria of Effectiveness

Following the extensive reviews of Barr (1948) and Domas and Tiedeman (1950), teacher effectiveness studies flourished. The bibliography of Getzels and Jackson (1963)

relate personal qualities of teachers to teacher effectiveness. Gage (1965) identified five desirable teacher behaviors: warmth, cognitive organization, orderliness, indirectness, and an ability to solve instructional problems (Gage, 1965, pp. 87-88).

The results of the data by Ryans (1960) based on observations of teachers indicated that favorable attitudes toward students, stable emotional adjustment, generous appraisals of others, participation in social groups, and a preference for nondirective classroom procedures correlated with superior ratings by principals, correlated with warm, understanding and friendly behavior measured by the Classroom Observation Record, and correlated with responsible, businesslike, systematic behaviors measured by the Classroom Observation Record (Ryans, 1960, p. 381).

In the report on the Equality of Educational Opportunity, Coleman (1966) emphasized the importance of locus-of-control as a factor that promotes achievement.

> ... a pupil attitude factor which appears to have a stronger relationship to achievement than do all the 'school' factors together, is the extent to which an individual feels that he has some control over his own destiny. (p. 23)

Flanders (1964), with his research on the use of Interaction Analysis, found that certain teacher statements inhibited student participation, while others encouraged participation. Restrictions occurred when a teacher lectured or expressed his own opinions, gave directions, gave criticism, or justified the use of his own authority.

These were identified as ineffective behaviors. Encouraging behaviors occurred when teachers clarified students' ideas, praised student actions, and made constructive interpretations of student feelings or attitudes (Flanders, 1964, pp. 202-3).

Ober et al. (1971) developed the Reciprocal Category System to identify teacher behaviors. Teacher talk that eliminated the tension in the situation; praised or encouraged the action behaviors; released tension with casual jokes; and accepts, clarifies, predicts and recalls the positive or negative feeling tone of others in a friendly manner were determined effective.

Brophy and Good (1974), in their extensive research on teacher effectiveness, identified a number of important behaviors. Effective teachers demonstrated a democratic leadership style as opposed to an authoritarian style. Warmth and enthusiasm were noted as essential, as was an abstract belief system as opposed to a concrete or conceptual belief system.

Five major components of good teaching were identified by Hildebrand (1973) in his study of the effective professor. These included the categories of analytic-synthetic; organization-clarity; instructor-group interaction; instructor-individual student interaction; and dynamism-enthusiasm. The analytic-synthetic teacher has an excellent command of the content. The organization-

clarity relates to the important components of instructor-group interaction and instructor-individual student interaction. Dynamism-enthusiasm refers to the ability of the professor to stimulate interest in the subject matter.

Dale Brethower (1973a, 1973b) focused on the importance of the ability of effective teachers to set conditions for learning such that transfer of training becomes a function between training conditions and transfer conditions.

He identified eight guidelines as necessary conditions for effective learning: objectives, evaluations, organization, learning strategies, individualization, illustrations and examples, grading methods, and feedback. In setting the conditions for learning, Brethower (1973b) states that students should know what skills, knowledge and/or attitudes were to be developed in the course; that the tests, papers, projects, etc., were in accord with the written objectives; that class time, instructional materials and methods, and evaluation procedures were well-integrated and clearly related to objectives; that procedures were available to accommodate individual differences among students; illustrations and examples should be frequent and systematic; methods of grading were to be made clear to students before the students were evaluated and that feedback on student progress was frequent, timely and useful (Brethower, 1973b, pp. 1-4).

Silberman (1969) discovered the existence of four basic teacher attitudes that directly related to effective and ineffective teaching: attachment, indifference, concern and rejection.

In studying the effective community college climate, Romine (1974) identified nine characteristics. The instructors demonstrated interest in students, were knowledgeable in their fields, offered courses that were relevant, encouraged students to work independently, maintained good rapport with students, utilized a well-balanced variety of instructional techniques, administered worthwhile and reasonable examinations, provided supplemental assistance (i.e. remedial or developmental instruction, or counseling), and regularly sought feedback from students about their courses.

The research of Gustad (1960), Corcoran (1961), and Williams (1965) identified effective teachers as sociable, enthusiastic, flexible, and nurturant in their attitudes toward students.

In their most recent work, Brophy and Evertson (1976) identified that teacher behaviors are typically measured on short-term student gains. Systematic, long-range measurement of effective teachers is over-due. The work of Dunkin and Biddle (1974) and Rosenshine and Furst (1973) identified consistent relationships between teacher behavior and student outcomes by experimental, systematic teacher observations, but have not enjoyed as good a

relationship when placed in the actual classroom setting.

From the literature on teacher effectiveness, the following description was written for use by judges to identify E-Type, traditionally labeled "effective" teacher behaviors:

> Teacher effectiveness has traditionally been associated with teacher behaviors endorsed by authorities in the teaching profession. These behaviors include careful lesson planning, the use of behavioral objectives, the ability to organize the learning environment, the proper application of learning theory, the display of democratic teaching style, the efficient presentation of subject matter, the display of flexibility in the teaching situation, the use of fair and objective evaluation procedures. These behaviors are most likely to be associated with E-Type teachers.
>
> Further, E-Type teachers are sometimes identified by their effectiveness in producing immediate, short-term gains in student achievement.

Invitational Teacher Behaviors

The philosophy of invitational teaching was developed by Purkey (1976a, 1976b) primarily from the literature and research on self concept theory. Current literature in education makes frequent reference to self concept as a determinant of effective behavior. Research has demonstrated that a person's view of himself plays a significant role in determining how he behaves in different situations. For example, if the person perceives himself as adequate and accepted by others rather than rejected and inadequate, he is likely to behave more intelligently (Rogers, 1969).

Many phenomenological studies have focused on perceptions of self. Individuals may attach very different meanings to similar situations. Thus, the process of education must focus on the meaning an individual attaches to his experience (Kelly, 1947). These clusters of meanings people attach to themselves are thought to be organized in a relatively stable fashion known as the self-concept (Purkey, 1970).

Many theorists and researchers consider positive self concepts to be an important personality characteristic of teachers. Rogers (1958), Coopersmith and Silverman (1969), Combs and Snygg (1959), Combs (1962, 1965, 1971), and Hamacheck (1969) refer to the importance of self concepts as positive influences on perceptions and attitudes in the classroom. Aspy (1969) identified teachers with high positive self concepts to have a positive effect on student intellectual development. Hatfield (1961) and Seidman (1969) identified teachers with positive self concepts as talking less and using more indirect teaching behavior.

Combs et al. (1971) encourages educators, who are members of the helping professions, to be sensitive to the student's internal world. They distinguish effective helpers from those less effective as teachers who perceive others as having the capacity to deal with their own problems, as believing in the worth and dignity of their fellow man, as behavior developing from within the person rather than externally caused, as believing people are

essentially trustworthy and dependable, and perceiving people as maintaining or enhancing their self rather than as threatening or impeding growth. These five major characteristics were identified as 1) able-unable, 2) friendly-unfriendly, 3) internally-externally motivated, 4) dependable-undependable, and 5) helpful-hindering.

Combs (1965) identified the importance of a broad and extensive available perceptual field on the subject matter to which the teacher is responsible. Good teachers are well informed teachers.

A recent outgrowth of the above cited research is the model proposed by Purkey on invitational teaching behaviors. This model is supported conceptually by the research of Brophy and Good (1974), Rosenthal and Jacobson (1968), Rosenthal and Rubin (1971), Mendals and Flanders (1973) and Rist (1970). These studies emphasize the importance of teacher enthusiasm, attentiveness, expectations, and encouragements as primary forces to student achievement.

Purkey (1975) identified the need for schools to make invitations explicit and to provide teachers with a positive and realistic frame of reference for secondary education. He states:

> The process of extending academic invitations is a complex phenomenon which almost defies the framework of contemporary educational thinking. ...Research studies of classroom interaction in secondary schools indicate that teachers tend to exhibit more positive nonverbal behavior (smiles, nods, winks) to students arbitrarily labeled "bright."

> ... It appears evident that teachers behave quite differently when they possess a positive image of the student's potential. (Purkey, 1975, p. 17)

The basis of invitational teaching is the belief that students are basically autonomous, capable and valuable (Purkey, 1975). In a published address to the University of Virginia, Purkey (1976b) cites examples of each of these categories:

(1) Invitations to be autonomous

"She treated me like I was responsible."
"The teacher held me accountable for my behavior."
"I could see the coach respected my decision."
"She encouraged me to take responsibility for myself."

(2) Invitations to be capable

"The teacher gave me confidence as a writer."
"I remember my science teacher saying I was a careful researcher."
"She was enthusiastic about my poetry."
"Coach said I had the ability if I had the desire."

(3) Invitations to be valuable

"I could tell the counselor was genuinely interested in me."
"The teacher made me feel like my ideas were important."
"I recall the time she invited all of us to her home for a cookout."
"He gave me encouragement to take part and make a contribution." (Purkey, 1976b, p. 5)

The following description was written to use for the identification of I-Type, invitational teacher behaviors by judges:

Invitations consist of all the verbal and nonverbal messages transmitted to students by their school environment which communicate to them that they are valuable, autonomous, and able to learn.

The I-Type teacher specializes in invitations. While most teachers send invitations, those sent by I-Type Teachers are different. They are based on high positive regard for the autonomy, value and ability of students. The invitations of I-Type teachers are genuine, and they are transmitted with unusual skill, developed to proficiency by practice and experience.

Among the special skills of the I-Type teacher is the ability to send invitations most likely to reach students, the skill of listening with care, and the ability to work at being authentic with oneself and with students.

CHAPTER III

DEVELOPMENT AND VALIDATION OF AN INSTRUMENT

Introduction

To develop items for the instrument to measure I-Type and E-Type teacher behavior, the investigator chose to synthesize literature on effective and invitational educators, developing items from the results of the literature reports.

Upon completion of identification of variables, expert judges were employed to rate each variable as to the type of teaching behavior. If it was unclear, they were to score the item "undecided." Appendix A is the description of E-Type and I-Type teachers for the judges. Appendix B is the summary of the results of competent judge ratings of the original instrument.

All variables were then subjected to item analysis to determine the reliability of the scale by its internal consistency scores. The instrument was then subjected to a factor analysis procedure to determine whether factor loadings would identify I-Type and E-Type variables agreed upon by expert judges.

The items that were identified by factor analysis as I-Type or E-Type but not identified by the panel of judges were subjected to a second panel of expert judges. The agreed upon revised scale from the factor analysis and panel of judges was then tested for internal consistency by item analysis.

Identification of Instrument Variables

The literature on teacher effectiveness and teacher invitations was the basis for the development of the "Inviting-Noninviting" Scale (IN Scale). Appendix C is a copy of the instrument as developed by the review of the literature. The items were written as a Likert-type instrument.

Likert-Type Scale

A Likert-type Scale is an elaborate type of rating scale outlined as follows:

1. It includes five categories for responses; "strongly agree," "agree," "undecided," "disagree," "strongly disagree."

2. Statements are classified into those which are favorable and those which are unfavorable, and approximately the same number of statements of each type is utilized.

3. For the favorable statements, the weights given to "strongly agree," "agree," "undecided," "disagree," and "strongly disagree" are 5, 4, 3, 2, and 1, respectively; thus, agreement with favorable statements and disagreement with unfavorable statements are treated as equivalent.

4. A large number of statements are administered to a group of respondents who are representative of those for whom the questionnaire is being constructed.

5. The responses are analyzed to determine which items discriminate best between the high-scoring individuals and the low-scoring individuals. Thus, for example, items to which high scorers and low scorers respond similarly are eliminated. This is known as an item-analysis procedure. (Murphy & Likert, 1937, p. 107)

The development of the statements for the scale met the criteria outlined by Edwards (1957).

Characteristics of Effective Teachers

Ryans (1960) studied teachers in a variety of settings using different techniques. He developed a Classroom Observation Record for observation of the teacher's behavior by a trained observer. The form contained eighteen dimensions for teachers: fair-partial, democratic-autocratic, responsive-aloof, understanding-restricted, kindly-harsh, stimulating-dull, original-stereotyped, alert-apathetic, attractive-unimpressive, responsible-evading, steady-erratic, poised-excitable, confident-uncertain, systematic-disorganized, adaptable-inflexible, optimistic-pessimistic, integrated-immature, and broad-narrow (Ryans, 1960,p. 381).

Of these eighteen dimensions the following statements were developed for the Likert-type scale measuring teacher behaviors:

1. The teacher treats me with fairness. (re: fair-partial)

2. The teacher treats me with impartiality.
   (re: fair-partial)

3. The style of teaching in this classroom is democratic.
   (re: democratic-autocratic)

4. The teacher seems to be evasive rather than responsible.
   (re: responsible-evading)

5. As the situation arises, the teacher seems to be adaptable rather than inflexible.
   (re: adaptable-inflexible)

Brophy and Good (1974) reported in their research that certain general traits were consistently associated with effectiveness, on the basis of short-term student gains: a democratic leadership style as opposed to an authoritarian, teacher warmth and enthusiasm, and an abstract belief system rather than a concrete or conceptual style (Brophy and Good, 1974, p. 268). On this basis the following items were developed for the IN Scale:

6. The teacher radiates warmth in the classroom.
   (re: warmth-enthusiasm)

7. There is little enthusiasm from this teacher in the classroom.
   (re: warmth-enthusiasm)

The IN Scale has been designed for the individual teacher-student interaction rather than for the teacher-class interaction. This differentiation is important as behavior exhibited by teachers appears to be directed toward individual students rather than the class as a group.

Using a general index of teacher behavior such as was developed by Flanders (1970) to measure patterns of behavior, is highly criticized by Brophy and Good (1974). Their criticism is support for the focus of the instrument on individual student-teacher interaction.

> When such an index is used, it implies that the teacher's behavior was directed to the class as a group rather than toward individual students at different times. Sometimes this underlying assumption holds, as when the indexes concern the teacher's test. More often, though, the teacher behavior studies in interaction analysis research involved words and actions directed to individual students. Praise and warmth, for example, are much more often directed toward individuals than toward the class as a group. (Brophy and Good, 1974, pp. 4-5)

Combs et al. (1971) described the teacher as a member of the helping professions. Because the classroom experience is indeed a relationship between the student and teacher, the teacher (helper) has some impact by the environment created. The teacher's success depends on the student's internal world.

> By concentrating attention on personal meaning the helper is really telling the client where he needs to look to find the solutions to his problems. When consistently treated this way the student or client soon learns to look in these places for himself without the guidance of an outside person. (Combs et al., 1971, p. 246)

The encouragement by the helper (teacher) to allow students to begin to control situations within their own environment is helpful for the student.

In the Florida Studies in the Helping Professions, Combs et al. (1969) describes the importance of constructs

educators hold toward their students. Effective helpers are distinguished from those less effective on several dimensions. Research supported that effective teachers had the following characteristics:

> Able-unable. Helpers perceive others as having the capacity to deal with their problems. The belief that people can find adequate solutions to events, as opposed to doubting the capacity of people to handle themselves and their lives.
>
> Friendly-unfriendly. Helpers see others as being of worth rather than unworthy. They see them as possessing a dignity and integrity which must be as unimportant beings whose integrity may be violated or treated as of little account.
>
> Internally-externally motivated. Helpers see people and their behavior as essentially developing from within rather than as a product of external events to be molded and directed; they see people as creative and dynamic rather than passive or inert.
>
> Dependable-undependable. Helpers see people as essentially trustworthy and dependable in the sense of behaving in lawful ways. They regard the behavior of people as understandable rather than capricious, unpredictable, or negative.
>
> Helpful-hindering. Helpers see people as being potentially fulfilling and enhancing to self rather than impeding or threatening. They regard people as important sources of satisfaction rather than as sources of frustration and suspicion. (Combs et al., 1969, pp. 12-13)

On the above data the investigator developed the following eight statements for the IN Scale:

8. I am treated as though I have the capacity to deal with situations as they arise.
   (re: able-unable)

9. I am treated with friendliness and care in the classroom.
   (re: friendly-unfriendly)

10. I am not respected by the teacher.
(re: friendly-unfriendly)

11. I am not perceived as an important part of the classroom process.
(re: friendly-unfriendly)

12. I am thought of as dynamic rather than passive.
(re: internally-externally motivated)

13. I am treated as though I am trustworthy.
(re: dependable-undependable)

14. I am treated as though I am not dependable.
(re: dependable-undependable)

15. I am treated as though I impede the educational process in the classroom.
(re: helpful-hindering)

One of the newer types of questioning devices developed is the critical incident technique (Flannagan, 1954). With this technique the respondent is asked to think of a recent experience of a highly specific type, to describe the incident, relate who was involved and what led up to the incident. One of the major problems in using this test is training scorers to make subjective judgments in a consistent manner. Regardless of the difficulties of analysis, researchers have used incident data with success (Eilbert, 1953; Jenson, 1951).

The critical incident test is most frequently scored on the following six scales: freeing-controlling; internal-external; people-things; worthy-unworthy; able-unable; and immediate-historical.

Because the research indicates that the critical incident technique is a valid measure, the above typical

criteria were used for the characteristics of effective teachers on the IN Scale. The following statements were developed for the instrument:

16. The teacher allows me to make my own decisions.
(re: freeing-controlling)

17. The teacher is concerned with my personal development.
(re: people-things)

18. The teacher is more concerned with immediate problems than past ones.
(re: immediate-historical)

Combs (1965) stressed certain major areas that are crucial in the development of an effective teacher. One of these is that good teachers are well informed.

> The good teacher is not stupid. He has a rich, extensive, and available field of perceptions about the subject matter for which he is responsible. (Combs, 1965, p. 20)

The following statement was developed for the IN Scale:

19. The teacher is knowledgeable in the subject matter.

Although Combs stressed the importance of this factor, he recognized that teachers rarely fail because of their lack of knowledge, rather because of their inability to transmit knowledge to the students. Regardless, it is a necessary first step.

One of the basic principles of learning in perceptual theory is that information acquired by the student will affect him only to the degree that it has personal meaning (Combs, 1965). Assuming this to be true, the following

statement has been developed for the IN Scale:

20. The teacher has not made this information relevant to me.

Following the work of Fiedler (1950) on ideal therapeutic relationships, Combs et al. (1969) identified the eight most ideal and least ideal characteristics of teachers. These sixteen statements have been included in the IN Scale, modified and personalized to reflect individual student-teacher relationships:

21. The teacher directs and guides me.

22. The teacher sees me as a co-worker on a common problem.

23. The teacher greatly encourages me.

24. The teacher seldom reassures me.

25. The teacher rarely tries to understand my feelings.

26. The teacher usually maintains rapport with me.

27. The teacher is able to understand my feelings.

28. The teacher gives and takes in the classroom environment.

29. The teacher is hostile toward me.

30. The teacher is rejecting to me.

31. The teacher's own needs interfere with the understanding of me.

32. The teacher is very unpleasant to me.

33. The teacher feels disgusted by me.

34. The teacher is seductive toward me.

35. The teacher is punitive.

36. The teacher cannot maintain rapport with me.

Hildebrand (1973) found five major components of good teaching in his research of characteristics and skills of the effective professor including: analytic-synthetic; organization-clarity; instructor-group interaction; instructor-individual student interaction; and dynamism-enthusiasm. These empahsize command of the subject matter, ability to get material across to the student, rapport with students as a group, rapport with students on a one-to-one basis, and stimulation of interest. As a result of this research, the following items were developed for the IN Scale:

37. The teacher presents the material in an organized, clear, concise manner. (re: organization-clarity)

38. The teacher creates a non-dynamic, uninteresting classroom environment for me. (re: dynamism-enthusiasm)

Dale Brethower (1973), in his paper on research in learning behavior has a different approach to the task of identifying effective teachers. Research supports his hypothesis that transfer of training is a function of the similarity between training conditions and transfer conditions. Effectiveness is measured in this investigation by academic achievement, thus the following item has been developed for the IN Scale:

39. The teacher simulates in the classroom similar conditions I will experience outside the classroom.

This item is also supported by the basic principle of learning in perceptual psychology that information will affect the student to the degree it has personal meaning for him. If the simulation enhances personal meaning through a task that is perceived as relevant, learning is more likely to occur.

Silberman (1969) discovered in his research of teacher-student interactions the existence of four basic teacher attitudes toward students: attachment, indifference, concern, and rejection. Teachers were asked the following questions regarding these dimensions:

> Attachment. If you could keep one student another year for the sheer joy of it, whom would you pick?
>
> Indifference. If a parent were to drop in unannounced for a conference, whose child would you be least prepared to talk about?
>
> Concern. If you could devote all your attention to a child who concerned you a great deal, whom would you pick?
>
> Rejection. If your class was to be reduced by one child, whom would you be relieved to have removed? (Silberman, 1969, p. 96)

Students who fell into these categories received markedly different treatment from teachers in the Silberman (1969) study. Students in the indifference group received very low frequency of contact. Further, contacts students did receive were brief and less emotionally involved. From this information the following items were developed for the scale.

40. The teacher seldom makes personal contact with me in the classroom.

41. If the teacher makes contact with me in the classroom, it is typically brief.

42. The contact the teacher makes with me in the classroom is unemotional.

Students in the rejection group seemed to make overwhelming and illegitimate demands on the teachers. As a result, Silberman (1969) noted that the teachers continuously watched the students, quickly reprimanded them for misbehavior, and did this publicly as a model for other students of what not to do. From this information the following item was developed:

43. The teacher reprimands misbehavior publicly and punitively to those students who make demands on him/her.

In his study of an effective community college instructional climate, Romine (1974) characterized the climate as follows:

1. As dynamic and personable people, the faculty members are sincerely interested in students, whom they respect as individuals, and are enthusiastic about their courses.

2. Knowledgeable of their special fields, faculty members prepare thoroughly for their courses, and they know how to teach as well as what to teach.

3. The courses offered are themselves credible, meaningful, relevant and useful; they are well organized and utilize well-written, interesting, and appropriate books and other materials, which are provided in ample quantity and are readily available to students.

4. Encouraged to work independently the students assume much personal responsibility for their learning and are actively involved in the

instructional process, as a result of which they are learning important things and attaining personal goals.

5. Communication between students and faculty is excellent; the instructors are easy to understand, and they realize when students are bored or confused; the present varying points of view and are careful and precise in answering questions.

6. In demonstrating an interesting style of classroom presentation, the instructors utilize a well-balanced variety of instructional techniques and they coordinate well the lectures, recitations, laboratory experiences, and other related teaching-learning endeavors.

7. The examinations and other requirements are worthwhile and reasonable; written assignments and tests are returned promptly and discussed; and the instructors regularly inform students of their performance with the interest of reinforcing learning.

8. Supplemental assistance, such as academic and related counseling, remedial or developmental instruction in basic skills, and instructor's individual assistance is readily available as needed.

9. Instructors regularly seek feed back from students about their courses and their teaching, with the view of fostering an optimal level of successful and satisfying teaching and learning. (Romine, 1974, pp. 427-28)

From these nine characteristics of an effective instructional climate the following statements have been developed for the IN Scale:

44. The teacher is sincerely interested in me as a student.

45. The teacher is not prepared to teach this course.

46. I am encouraged to assume as much personal responsibility for learning as possible.

47. I communicate with my teacher well.

48. The teacher is easy to understand.

49. The teacher is seldom boring.

From studies by Gustad (1960), Corcoran (1961) and Williams (1965), effective teachers tend to be more socially and theoretically oriented, more enthusiastic and flexible, more nurturant in their attitudes towards students, and better organized in the classroom. Their value systems differ from less successful colleagues. As described by Eckert (1973):

> They are different sorts of persons indeed from the custodian, preacher, or therapist types ridiculed in Illich's (1971) scathing attack on current school and college staffs.
>
> ... Were a taxonomy of faculty characteristics developed along the Bloom-Krathwohl lines (Bloom, 1964), it would undoubtedly show that faculty members, to fulfill their teaching roles in the years ahead, must generally know more, must feel or care more and must do more than has been conventionally associated with their roles. (Eckert, 1973, p. 45)

This information developed the following statements for the IN Scale:

50. The teacher knows about me as a person.

51. The teacher encourages my interests and needs.

52. The teacher demonstrates that he/she cares about me by putting his/her imagination into teaching.

53. The teacher demonstrates that he/she puts effort into his/her teaching.

For students to achieve, teachers must design an instructional environment most conducive for learning. Brethower (1973b) cites eight guidelines as necessary conditions for learning:

(1) Objectives: students know what skills, knowledge, and/or attitudes are being developed in the course.

(2) Evaluations: tests, papers, projects and other measures are in accord with objectives.

(3) Organization: class time, instructional materials and methods, and evaluation procedures well-integrated and clearly related to objectives.

(4) Learning strategies: students are given useful strategies for attaining objectives.

(5) Individualization: procedures are used which accommodate individual differences among students.

(6) Illustrations and examples: there should be frequent and systematic use of examples and illustrations rather than reliance upon verbal description.

(7) Grading methods: methods of grading are made clear to students before students are evaluated.

(8) Feedback: feedback on student progress is frequent, timely and useful. (Brethower, 1973, pp. 1-4)

From these eight conditions for effective instruction, the following questions have been developed for the scale:

54. No description of objectives are given to me for this course.
(re: objectives)

55. Testing instruments measure my performance which is not closely related to attaining the objectives.
(re: evaluation)

56. I am actively encouraged to participate in learning the material.
(re: organization)

57. Few suggestions are made to me regarding how to achieve.
(re: learning strategies)

58. Examples and/or illustrations are rarely provided by the teacher.
(re: illustrations and examples)

59. There is no explanation of grading procedures.
(re: grading methods)

60. Feedback on how well I'm doing is given only once or twice before the end of the quarter.
(re: feedback)

The importance of the influence teachers have in the classroom was reported by Flanders (1964) when he reviewed the literature. Several generalizations about teacher-influence include:

> First, there is direct relationship between teacher influence that encourages student participation and constructive pupil attitudes toward the teacher, and school work, and the class activities.
>
> Second, different students will have different attitudes in the same classroom situation. In spite of these individual differences, the first generalization holds.
>
> Third, when dealing with the class as a whole, all the evidence suggests a causal relationship -- the teacher behavior causes pupil attitudes.
>
> Fourth, a number of different factors affect the paterns of influence teachers use. Among these are: (1) the subject matter being taught, (2) the age and maturity of the students, (3) the instructor's preferred style of teaching, and (4) the nature of the learning activities.
>
> Fifth, all teachers employ a combination of statements, some that restrict freedom of participation and others that expand it. Given an extended period of observation, a fairly stable proportion or balance of indirect and direct statements can be identified for each teacher. This ratio, called the 'I/D ratio' is positively correlated with the class average on an attitude inventory. (Flanders, 1964, p. 206)

Flanders generalizations are supported by previous cited literature (Brethower, 1973; Combs & Snygg, 1959; and Hildebrand, 1973) that invitations, or the lack of invitations students receive in the classroom environment are primarily received in a teacher-student interaction. Without interaction between the teacher and student (be it positive or negative) there will be little influence on academic achievement.

Characteristics of Invitational Teachers

The concept of invitational teaching was developed primarily from the research and writing of Purkey (1975, 1976a, 1976b). Purkey (1976b), in a keynote address at the University of Virginia, cited examples of invitations in three basic categories: invitations to be autonomous, to be capable, and to be valuable.

> Teaching is viewed primarily as the complex process of inviting students to view themselves, others, and the world in essentially positive and realistic ways. The heart of invitational teaching is the belief that students like other humans, are autonomous, capable, and valuable. (Purkey, 1976b, p. 9)

From his examples the following items have been developed for the IN Scale:

61. The teacher holds me accountable for my behavior.
(re: autonomous)

62. The teacher respects my decisions.
(re: autonomous)

63. The teacher gives me confidence as a student.
(re: capable)

64. The teacher suggests that I don't have the ability even if I had the desire.
(re: capable)

65. I can tell the teacher is not genuinely interested in me.
(re: valuable)

66. The teacher makes me feel like my ideas are important.
(re: valuable)

67. When I am in the classroom I can almost feel myself becoming more intelligent.
(re: capable)

68. I am treated as though I do not have sense enough to follow simple directions.
(re: capable)

Because invitations consist of all the verbal and nonverbal messages transmitted to students by their school environment which communicate to students that they are valuable, autonomous, and able to learn, some of the previous items written for the IN Scale derived from the literature on effective teaching should apply to invitational teaching. For this reason, the sixty-eight items were subjected to a panel of expert judges for ratings. The panel members were given a description of E-Type and I-Type teacher behaviors (see Appendix A).

Content Validation

The most common definition of validity is the determination of whether or not one is measuring what one thinks one is measuring. Four types of validity have been identified (Cronbach & Meehl, 1955). These include predictive, concurrent, content and construct validity.

Content validity consists essentially in judgment. The scale items are subjected to review by an expert or panel of experts. To do this, the judges must be furnished with specific directions for making judgments, as well as the specifications of what they are judging (Kerlinger, 1964).

Five judges were asked to rank the sixty-eight items of the IN Scale as I-Type, E-Type or Undecided. Negative statements were included in the same categories as I-Type or E-Type teaching behaviors. If there was question about the item fitting into only category, the judge was to rank it "undecided." Appendix B identifies the ranking of the five judges. Those items with two or more undecided votes were eliminated as I-Type or E-Type items.

From the results of the ratings by judges, I-Type invitational teacher behaviors were identified by items 8, 9, 10, 11, 13, 14, 15, 22, 23, 24, 38, 40, 41, 42, 44, 52, 53, 62, 63, 64, 65, 66, 67, and 68. The E-Type effective teacher behaviors were identified by items 1, 3, 4, 5, 6, 19, 20, 25, 27, 28, 29, 36, 37, 45, 48, 54, 55, 58, and 59. Those items in question included items 2, 7, 12, 16, 17, 18, 21, 26, 30, 31, 32, 33, 34, 35, 39, 43, 46, 47, 49, 50, 51, 56, 57, 60, and 61.

Mehrens and Lehman (1973) report four common methods to estimate reliability: (1) measures of stability (test-retest), (2) measures of equivalence (parallel forms),

(3) measures of equivalence and stability, and (4) measures of internal consistency. The IN Scale, following analysis for content validity, was subjected to the procedure to determine reliability.

Item Analysis of IN Scale

Because the first three measures of reliability identified by Mehrens and Lehman (1973) require two testing sessions which was not feasible for this study, the investigator used the measure of internal consistency. The Split-half and Kuder-Richardson were performed to determine reliability of each statement and an overall reliability coefficient for the IN Scale.

The IN Scale was administered to a sample population of one hundred thirteen students. Students completed the scale, reporting on teacher behaviors in their technical and general education courses.

The computer program (Johnson et al., 1972) selected for use performed an internal consistency analysis according to formulas based on Kuder and Richardson's (1937) equation three for scale reliability. Item reliability is determined by:

(1) Summing all respondents' answers to each item.

(2) Item totals are then added together for a grand total.

(3) Each item total is removed from the grand total before it is correlated against the grand total, thereby calculating an unbiased item reliability.

While the measure of the reliability of an item is important, a correspondingly more important statistic is a comprehensive measure of the reliability of the scale as a unit. The technique used for scale reliability was to calculate the variance in the total score which can be attributed to internal consistencies. The variance is expressed as a portion of the total variance of the total score.

Both item reliability and questionnaire reliability are positive and less than "1.0." As suggested in the computer program on Item Analysis (Johnson et al., 1972), an item and/or questionnaire reliability of .3 or higher is acceptable.

The item analysis and test summary from the program consisted of:

a. For each item the item number, mean response, total of responses, variance and standard deviation of responses, and the individual item reliability.

b. For the test, average score, variance and standard deviation of scores, and total test reliability.

Table I is a summary of the complete IN Scale containing both sub-scales measuring E-Type and I-Type teacher behaviors. Table II is the test summary of the original scale. Table III is a summary of the subscale on I-Type teacher behaviors; Table IV is a test summary of the I-Type items; Table V is a summary of the subscale on E-Type teacher behaviors; and Table VI is a test summary of the E-Type items.

TABLE I

ITEM ANALYSIS SUMMARY OF
ORIGINAL IN SCALE

Item	Mean Response	Sum of Response	Variance	Standard Deviation	Test Reliability
1	4.159	470	0.7711	0.8781	0.5408
2	3.537	411	1.3462	1.1603	0.2609
3	3.673	415	1.5123	1.2297	0.6025
4	3.416	386	1.6766	1.2048	0.4328
5	3.832	433	1.2549	1.1202	0.4806
6	3.496	395	1.5066	1.2274	0.7158
7	3.903	441	1.5038	1.2263	0.5699
8	4.009	453	0.9114	0.9547	0.4555
9	3.093	441	1.0436	1.0216	0.6386
10	3.956	447	1.3874	1.1779	0.5165
11	3.681	416	1.2082	1.0992	0.6447
12	3.204	362	1.1710	1.0821	0.2512
13	4.027	455	1.1940	1.0927	0.4555
14	4.071	460	1.1277	1.0619	0.4073
15	3.761	425	1.3677	1.1695	0.3170
16	3.912	442	1.0187	1.0093	0.4582
17	3.619	409	1.5809	1.2583	0.7198
18	3.389	383	1.0519	1.0245	0.1277
19	4.345	491	1.0048	1.0024	0.3760
20	3.761	425	1.7217	1.3121	0.6570
21	3.566	403	1.2190	1.1041	0.6996
22	3.283	371	1.2826	1.1325	0.7068
23	3.496	395	1.4358	1.1983	0.6843
24	3.496	395	1.5774	1.2560	0.6476
25	3.602	407	1.4963	1.2232	0.6707
26	3.690	417	0.9218	0.9601	0.4770
27	3.655	413	1.0933	1.0456	0.6918
28	3.814	431	1.1425	1.0689	0.7402
29	4.195	474	0.0991	0.9488	0.4571
30	4.097	463	1.0613	1.0302	0.6558
31	3.708	419	1.3041	1.1420	0.6812
32	4.088	462	1.0718	1.0353	0.6143
33	4.212	476	0.5390	0.7341	0.6347
34	4.142	468	0.9711	0.9854	0.2368
35	3.796	429	0.9409	0.9700	0.4181
36	3.850	435	1.1367	1.0661	0.5951
37	3.823	432	1.4515	1.2496	0.5908
38	3.611	408	1.8130	1.3464	0.5023

TABLE I - CONTINUED

Item	Mean Response	Sum of Response	Variance	Standard Deviation	Item Reliability
39	3.496	396	1.4181	1.1908	0.4930
40	3.372	381	1.6672	1.2912	0.5852
41	2.885	326	1.4823	1.2175	0.4177
42	2.956	334	1.3520	1.1638	0.3714
43	3.469	392	1.2933	1.1372	0.4122
44	3.664	414	1.4798	1.2165	0.7224
45	4.000	452	1.6106	1.2691	0.4737
46	4.027	455	0.9462	0.9727	0.4024
47	3.788	438	1.1584	1.0763	0.7373
48	3.814	431	1.3017	1.1409	0.7864
49	3.549	401	1.5397	1.1204	0.5873
50	3.097	350	1.4684	1.2118	0.5807
52	3.531	399	1.0908	1.0397	0.6305
53	3.912	442	1.0718	1.0353	0.6447
54	3.984	440	1.2631	1.1239	0.2224
55	3.398	384	1.3370	1.1563	0.4627
56	3.832	433	0.9894	0.9937	0.5638
57	3.425	387	1.3240	1.1506	0.5379
58	3.947	446	1.3246	1.1509	0.5572
59	4.018	454	1.4687	1.2119	0.3337
60	3.416	386	1.9774	1.4062	0.3975
61	3.956	447	0.8388	0.9158	0.2586
62	3.628	410	1.1716	1.0824	0.7416
63	3.602	407	1.4609	1.2087	0.6309
64	4.071	460	1.2516	1.1188	0.5603
65	3.673	415	1.3999	1.1401	0.6416
66	3.504	396	1.0995	1.0486	0.7892
67	3.169	357	1.4614	1.2089	0.5770
68	3.973	449	1.3179	1.1480	0.5457

The test reliability of the entire instrument was calculated to be 0.97 with 113 respondents. The test reliability of the subscale for I-Type teacher behaviors was calculated to be 0.93 with 113 respondents. The test reliability of the subscale for E-Type teachers was calculated to be 0.89. Given that the perfect reliability is 1.00,

each of these scales demonstrated very high internal consistency in testing for reliability of the instrument.

TABLE II

TEST SUMMARY OF ORIGINAL IN SCALE

Respondents	Average Score	Standard Deviation	K-R Test Reliability
113	242.5133	42.7597	0.9677

TABLE III

ITEM ANALYSIS SUMMARY OF INVITATIONAL BEHAVIORS SUBSCALE OF ORIGINAL IN SCALE

Item	Mean Response	Sum of Response	Variance	Deviation	Item Reliability
1-8	4.009	453	0.9114	0.9547	0.4801
2-9	3.903	441	1.0436	1.0216	0.6312
3-10	3.956	447	1.3874	1.1779	0.5514
4-11	3.681	416	1.2082	1.0992	0.6328
5-13	3.204	362	1.1710	1.0821	0.2939
6-14	4.027	455	1.1940	1.0927	0.4901
7-15	4.071	460	1.1277	1.0619	0.4123
8-17	3.912	442	1.0187	1.0093	0.4188
9-22	3.283	371	1.2826	1.1326	0.6915
10-23	3.496	396	1.4368	1.1093	0.7052
11-24	3.496	395	1.5774	1.2560	0.6642
12-38	3.611	408	1.8130	1.3465	0.4648
13-40	3.372	381	1.6672	1.2912	0.5948
14-41	2.885	326	1.4823	1.2175	0.4600
15-42	2.956	334	1.3520	1.1628	0.3828
16-44	3.664	414	1.4798	1.2165	0.6975
17-50	5.027	455	0.9462	0.9727	0.3527
18-51	3.531	399	1.0809	1.0397	0.6133

TABLE III - CONTINUED

Item	Mean Response	Sum of Response	Variance	Standard Deviation	Item Reliability
19-52	3.912	442	1.0818	1.0353	0.6105
20-53	3.416	386	1.9774	1.4062	0.4194
21-56	3.596	447	0.8388	0.9158	0.2245
22-62	3.638	410	0.1816	0.0824	0.7280
23-63	3.602	407	1.4609	1.3087	0.5318
24-64	4.071	460	1.2516	1.1188	0.4579
25-65	3.673	415	1.2999	1.1401	0.5024
26-66	3.504	396	1.0995	1.0486	0.7503
27-67	3.159	357	1.4614	1.2089	0.5713
28-68	3.973	449	1.3179	1.1480	0.5857

TABLE IV

TEST SUMMARY OF INVITATIONAL BEHAVIOR SUBSCALE OF ORIGINAL IN SCALE

Respondents	Average Score	Variance	Standard Deviation	K-R Test Reliability
113	101.9734	346.2734	18.6084	0.9288

TABLE V

ITEM ANALYSIS SUMMARY OF EFFECTIVE BEHAVIORS
SUBSCALE OF ORIGINAL IN SCALE

Item	Mean Response	Sum of Response	Variance	Standard Deviation	Item Reliability
1-1	4.159	470	0.7711	0.8781	0.6011
2-3	3.637	411	1.3462	1.1503	0.3553
3-4	3.673	415	1.5123	1.2297	0.5065
4-5	3.416	386	1.6766	1.2948	0.5165
5-6	3.832	433	1.3549	1.1201	0.4858
6-19	4.345	491	1.0048	1.0024	0.3121
7-20	3.602	407	1.4963	1.2232	0.5835
8-25	3.655	413	1.0933	1.0456	0.6210
9-27	3.814	431	1.1425	1.0689	0.7427
10-28	4.196	474	0.9001	0.9488	0.5773
11-29	4.097	463	1.0613	1.0302	0.6214
12-36	4.088	462	1.0718	1.0353	0.6460
13-37	4.212	476	0.5390	0.7341	0.6462
14-38	4.142	468	0.9711	0.9854	0.3105
15-45	3.796	429	0.9409	0.9700	0.5133
16-48	3.850	435	1.1367	1.0661	0.6717
17-53	4.000	452	1.6106	1.2691	0.4347
18-54	3.894	440	1.2631	1.1239	0.2928
19-55	3.398	384	1.3370	1.1563	0.4620
20-58	3.947	446	1.3246	1.1509	0.5299
21-59	4.018	454	1.4687	1.2119	0.3584

TABLE VI

TEST SUMMARY OF EFFECTIVE BEHAVIORS
SUBSCALE OF ORIGINAL IN SCALE

Respondents	Average Score	Variance	Standard Deviation	K-R Test Reliability
113	81.7699	166.9556	12.9211	0.8909

Factor Analysis of the Original IN Scale

Factor analysis is a statistical procedure commonly used in validation of an instrument to determine the number and nature of underlying variables from a large number of measures. The factor is a hypothetical construct that underlies the instrument.

The single most distinctive characteristic of factor analysis is its data-reduction capability. Given an array of correlation coefficients for a set of variables, factor analytic techniques enable the investigator to see whether some underlying pattern of relationships exist such that the data could be "rearranged" or "reduced" to a small set of factors or components. These components could be taken as variables accounting for the source of the observed interrelations in the data.

Within the IN Scale, five hypothetical "factors" appeared; two factors on I-Type teaching behaviors, and three factors on E-Type teaching behaviors. The investigator, seeking a common theme within the loadings, identified these factors as follows:

I-Type Variables:

Factor I: Caring
Item Numbers 9, 17, 22, 23, 24, 25, 27, 40, 41, 42, 44, 50, 51, 52, 56, 62, 63, 65, 66, and 67

Factor II: Respect
Item Numbers 10, 11, 13, 14, 15, and 64

E-Type Variables:

Factor III: Course Organization
Item Numbers 38, 54, 55, 58 and 59

Factor IV: Interpersonal contact
Item Numbers 1, 29, 30, 31, 32, 33, 34, 35 and 36

Factor V: Learning Environment
Item Numbers 1, 3, 4, 5, 19, 20, 28, 37, 45, 48, and 53

Table VII is the summary of the factor loadings of the entire original IN Scale. Tables VIII and IX are the summaries identifying the factor loadings on the I-Type and E-Type variables, respectively.

From the results of the factor analysis, the IN Scale was modified to include only those items that factor loaded in the five clusters. The invitational variables of the new IN Scale included the following:

9. I am treated with friendliness and care in the classroom.
(re: caring)

10. I am not respected by the teacher.
(re: respect)

11. I am not perceived as an important part of the classroom process.
(re: respect)

13. I am treated as though I am trustworthy.
(re: respect)

14. I am treated as though I am not dependable.
(re: respect)

15. I am treated as though I impede the educational process.
(re: respect)

17. The teacher is concerned with my personal development.
(re: caring)

TABLE VII

MATRIX ROTATED TO VARIMAX CRITERION

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	0.2515	0.1908	0.0156	0.4139	0.4286
2	0.0505	0.0548	0.0109	0.2665	0.2365
3	0.2660	0.3574	0.0632	0.1302	0.4228
4	0.0887	0.0736	0.2423	0.3156	0.5219
5	0.2439	0.0863	0.0850	0.2080	0.5497
6	0.4975	0.3036	0.0683	0.1218	0.4462
7	0.2935	0.4498	0.3093	0.0095	0.2375
8	0.2510	0.3867	-0.0128	0.1721	0.3603
9	0.4362	0.3858	0.0178	0.3552	0.2807
10	0.3171	0.4083	0.1357	0.3636	0.1352
11	0.3015	0.4165	0.1910	0.2783	0.0974
12	0.3020	0.1839	0.0091	-0.0128	-0.0273
13	0.3152	0.5000	0.0077	0.1749	0.0559
14	0.0993	0.5217	0.2733	0.2057	0.0193
15	-0.0411	0.4892	0.1973	0.2047	0.0757
16	0.2969	0.2093	-0.1808	0.2458	0.3127
17	0.5380	0.3387	0.0771	0.2051	0.3517
18	0.0462	0.0105	-0.0075	0.0179	0.0133
19	0.0554	0.0518	0.1576	0.1232	0.5181
20	0.1946	0.1712	0.3088	0.1418	0.4607
21	0.3611	0.3040	0.0956	0.2205	0.3827
22	0.4527	0.2429	0.0465	0.1799	0.2885
23	0.5118	0.3395	0.2350	0.1858	0.3460
24	0.4307	0.2939	0.1929	0.1966	0.2522
25	0.4715	0.3498	0.2632	0.2340	0.1797
26	0.2895	0.1653	0.1159	0.2979	0.3646
27	0.5626	0.1868	0.0180	0.2959	0.3268
28	0.2998	0.1332	0.1217	0.3433	0.4931
29	0.1886	0.3793	0.1175	0.5933	0.1372
30	0.3491	0.2932	0.0583	0.6256	0.2301
31	0.3108	0.3498	0.0979	0.5160	0.3190
32	0.1896	0.1653	0.1036	0.5604	0.2386
33	0.2070	0.1858	0.1511	0.7031	0.1041
34	0.0053	0.1332	0.1089	0.4736	0.1107
35	0.0762	0.2600	0.1075	0.6063	0.1540
36	0.2323	0.0876	0.1787	0.6008	0.2574
37	0.2750	0.0167	0.3526	0.1640	0.5614
38	0.1859	0.1380	0.4557	0.1670	0.2637
39	0.4079	0.0397	0.2757	0.0909	0.3464
40	0.5013	0.0833	0.1682	0.2650	0.0929

TABLE VII - CONTINUED

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
41	0.5787	0.1091	0.0435	0.1389	0.0064
42	0.5142	0.1105	0.0688	0.1782	-0.0063
43	0.1547	0.0359	0.0420	0.3123	0.2274
44	0.5564	0.1596	0.1046	0.2397	0.3387
45	0.2097	0.0236	0.3581	0.2615	0.4333
46	0.3713	0.1126	0.2430	0.1695	0.0757
47	0.5635	0.1444	0.2052	0.3487	0.2674
48	0.4795	0.1127	0.2493	0.2278	0.1802
49	0.4643	0.0017	0.3143	0.1132	0.3664
50	0.6070	0.0688	0.0844	0.1872	0.0870
51	0.6805	0.1486	0.2426	0.0412	0.1737
52	0.5349	0.0790	0.2827	0.0469	0.2923
53	0.3893	0.0853	0.3187	0.1581	0.4874
54	0.0545	0.0300	0.4539	0.1347	0.3072
55	0.0790	0.2055	0.4308	-0.0203	0.1168
56	0.5835	0.0367	0.3416	0.1012	0.1456
57	0.2608	0.2464	0.3742	-0.0172	0.1515
58	0.2694	0.0906	0.4528	0.2340	0.1202
59	0.1153	-0.0550	0.5064	0.3874	-0.0254
60	0.2070	0.1616	0.3287	0.1109	0.1349
61	0.0919	0.0666	0.1144	0.2348	0.0294
62	0.5476	0.2185	0.0406	0.2523	0.2547
63	0.5574	0.2015	0.1739	0.1174	0.3300
64	0.1038	0.4045	0.4973	0.3823	0.0535
65	0.4620	0.1176	0.3476	0.3786	0.1782
66	0.6028	0.1288	0.0791	0.1674	0.3669
67	0.4856	0.0081	0.2008	0.0839	0.3282
68	0.2566	0.2152	0.1880	0.4265	0.1475

TABLE VIII

ROTATED FACTOR MATRIX: INVITATIONAL VARIABLES

Item Number	Factor I Caring	Factor II Respect
9	0.4362	
17	0.5380	
22	0.4527	
23	0.5118	
24	0.4707	
25	0.4716	
27	0.4525	
40	0.5013	
41	0.5787	
42	0.5142	
44	0.5564	
50	0.6070	
51	0.6805	
52	0.5349	
56	0.5835	
62	0.5476	
63	0.5774	
65	0.4620	
66	0.6028	
67	0.4856	
10		0.4083
11		0.4165
13		0.4000
14		0.5217
15		0.4892
64		0.4045

TABLE IX

ROTATED FACTOR MATRIX: EFFECTIVE VARIABLES

Item Number	Factor III Course Organization	Factor IV Interpersonal Contact	Factor V Learning Environment
38	0.4557		
54	0.4539		
55	0.5308		
58	0.4538		
59	0.5064		
1		0.4139	
29		0.5933	
30		0.6256	
31		0.5160	
32		0.5604	
33		0.7031	
34		0.4736	
35		0.6063	
36		0.6008	
3			0.4228
4			0.5219
5			0.5497
19			0.5181
20			0.4607
28			0.4931
37			0.5614
45			0.4333
48			0.4802
53			0.4874

22. The teacher sees me as a co-worker on a common problem.
(re: caring)

23. The teacher greatly encouraged me.
(re: caring)

24. The teacher seldom reassures me.
(re: caring)

25. The teacher rarely tries to understand my feelings.
(re: caring)

27. The teacher is able to understand my feelings.
(re: caring)

40. The teacher seldom makes personal contact with me in the classroom.
(re: caring)

41. If the teacher makes contact with me in the classroom, it is typically brief.
(re: caring)

42. The contact the teacher makes with me in the classroom is unemotional.
(re: caring)

44. The teacher is sincerely interested in me as a student.
(re: caring)

50. The teacher knows about me as a person.
(re: caring)

51. The teacher encourages my interests and needs.
(re: caring)

52. The teacher demonstrates that he/she cares about me by putting his/her imagination into teaching.
(re: caring)

56. I am actively encouraged to participate in learning the material.
(re: caring)

62. The teacher respects my decisions.
(re: caring)

63. The teacher gives me confidence as a student.
(re: caring)

64. The teacher suggests that I don't have the ability even if I had the desire.
(re: respect)

65. I can tell the teacher is not genuinely interested in me.
(re: caring)

66. The teacher makes me feel like my ideas are important.
(re: caring)

67. When I am in the classroom I can almost feel myself becoming more intelligent.
(re: caring)

The E-Type behaviors of the revised IN Scale include:

1. The teacher treats me with fairness.
(re: interpersonal contact)

3. The style of teaching in this classroom is democratic.
(re: learning environment)

4. The teacher seems to be evasive rather than responsible.
(re: learning environment)

5. As the situation arises, the teacher seems to be adaptable rather than inflexible.
(re: learning environment)

19. The teacher is knowledgeable in the subject matter.
(re: learning environment)

20. The teacher has not made the information relevant to me.
(re: learning environment)

28. The teacher gives and takes in the classroom environment.
(re: learning environment)

29. The teacher is hostile toward me.
(re: interpersonal contact)

30. The teacher is rejecting to me.
(re: interpersonal contact)

31. The teacher's own needs interfere with the understanding of me.
(re: interpersonal contact)

32. The teacher is very unpleasant to me.
(re: interpersonal contact)

33. The teacher feels disgusted by me.
(re: interpersonal contact)

34. The teacher is seductive toward me.
(re: interpersonal contact)

35. The teacher is punitive.
(re: interpersonal contact)

36. The teacher cannot maintain rapport with me.
(re: interpersonal contact)

37. The teacher presents the material in an organized, clear, concise manner.
(re: learning environment)

38. The teacher creates an uninteresting classroom environment for me.
(re: course organization)

45. The teacher is not prepared to teach this course.
(re: learning environment)

48. The teacher is easy to understand.
(re: learning environment)

53. The teacher demonstrates that he/she puts effort into his/her teaching.
(re: learning environment)

54. No description of objectives are given to me for this course.
(re: course organization)

55. Testing instruments measure my performance which is not closely related to attaining the objectives.
(re: course organization)

58. Examples and/or illustrations are rarely provided by the teacher.
(re: course organization)

59. There is no explanation of grading procedures.
(re: course organization)

Appendix D is a copy of the revised IN Scale used to collect the data for the research.

Content Validation of Revised IN Scale

Items resulting from the factor analysis as I-Type and E-Type, but not so identified by the first panel of judges were re-submitted to a second panel of seven judges. Items that six of the seven judges agreed upon were included in the revised IN Scale. Results of the panel ratings are located in Table X below.

TABLE X

RESULTS OF COMPETENT JUDGE RATINGS
ON ITEMS NOT AGREED UPON OF
ORIGINAL SIXTY-EIGHT ITEMS OF THE IN SCALE

Item	Original Rating Type by Judges	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	*Drop Item	**Reclassify Item
6	E	I	E	E	I	I	I	I	*	
7	U	I	E	E	I	I	U	U	*	
15	U	E	I	I	I	I	I	I		**
17	U	I	I	I	I	I	I	I		**
25	E	I	I	I	I	I	I	I		**
29	U	E	E	E	E	E	E	U		**
30	U	E	E	U	E	E	E	E		**
31	U	E	E	U	E	E	U	U	*	
32	U	E	E	U	E	E	E	E		**
33	U	E	E	E	E	E	U	E		**
34	U	I	I	I	U	I	U	I	*	
35	U	E	E	E	U	E	E	E		**
37	U	E	E	E	E	E	U	E		**
38	I	I	E	E	E	E	E	E		**
47	U	I	E	E	E	E	I	E	*	
48	U	E	E	E	E	E	E	E		**
49	U	E	E	E	E	E	I	E	*	
50	U	E	I	I	I	I	I	I		**
53	I	E	E	E	E	E	U	E		**
56	U	I	I	I	I	I	I	I		**
68	I	I	I	I	U	I	U	U	*	

Item Analysis of Revised IN Scale

The above revised scale items were subjected to a second item analysis by the computer program (Johnson et al., 1972) selected for use to perform an internal consistency analysis according to formulas based on Kuder and Richardson's (1937) equation three for scale reliability. Tables XI through XX are summaries of the test reliabilities of each factor of the revised IN Scale.

TABLE XI

ITEM ANALYSIS VARIABLE SUMMARY OF
REVISED IN SCALE FOR I-TYPE FACTOR I: CARING

Item	Mean Response	Sum of Response	Variance	Standard Deviation	Item Reliability
9	4.091	225	0.8099	0.9000	0.6828
17	3.655	201	1.1352	1.0655	0.6616
22	3.436	189	1.0096	1.0048	0.5436
23	3.709	204	1.4426	1.2011	0.7856
24	3.509	193	1.3772	1.1735	0.7906
25	3.873	213	0.9838	0.9919	0.6006
27	3.655	201	0.8807	0.9384	0.6417
40	3.364	185	1.3587	1.1656	0.5207
41	3.000	165	1.4182	1.1909	0.2953
42	3.073	169	1.4129	1.1887	0.2245
44	3.655	201	1.2443	1.1155	0.7174
50	2.800	154	1.4691	1.2121	0.6065
51	3.545	196	0.9388	0.9689	0.6148
52	3.655	201	1.0625	1.0308	0.6215
56	3.836	211	0.8641	0.9296	0.5519
62	3.792	208	0.8979	0.9476	0.7348
63	3.927	216	0.9765	0.9882	0.6223
65	3.800	209	1.0327	1.0162	0.6494
66	3.582	197	1.2251	1.1069	0.7467
67	3.309	182	1.3408	1.1579	0.7843

TABLE XII

TEST SUMMARY OF I-TYPE FACTOR I: CARING

Respondents	Average Score	Variance	Standard Deviation	K-R Factor Reliability
55	71.25[illegible]	198.7716	14.0986	0.9313

TABLE XIII

ITEM ANALYSIS VARIABLE SUMMARY OF
REVISED IN SCALE FOR I-TYPE FACTOR II: RESPECT

Item	Mean Response	Sum of Response	Variance	Standard Deviation	Item Reliability
10	4.273	235	0.9983	0.9992	0.4840
11	4.036	222	0.7987	0.8937	0.4403
13	4.091	225	0.7736	0.8795	0.4366
14	4.127	227	0.6202	0.7875	0.4288
15	3.891	214	1.0790	1.0388	0.4123
64	4.164	229	0.9005	0.9489	0.4911

TABLE XIV

TEST SUMMARY OF I-TYPE FACTOR II: RESPECT

Respondents	Average Score	Variance	Standard Deviation	K-R Factor Reliability
55	24.5818	12.7888	3.5761	0.6779

TABLE XV

ITEM ANALYSIS VARIABLE SUMMARY OF REVISED IN SCALE FOR E-TYPE FACTOR III: COURSE ORGANIZATION

Item	Mean Response	Sum of Response	Variance	Standard Deviation	Item Reliability
38	3.927	216	1.2311	1.1095	0.3661
54	3.818	210	1.3851	1.1769	0.3066
55	3.455	190	1.0843	1.0413	0.4962
58	4.000	220	1.2000	1.0954	0.3489
59	4.055	223	1.0698	1.0343	0.4448

TABLE XVI

TEST SUMMARY OF E-TYPE FACTOR III:
COURSE ORGANIZATION

Respondents	Average Score	Variance	Standard Deviation	K-R Factor Reliability
55	19.2545	12.1534	3.4862	0.5845

TABLE XVII

ITEM ANALYSIS VARIABLE SUMMARY OF
REVISED IN SCALE FOR E-TYPE FACTOR IV:
INTERPERSONAL CONTACT

Item	Mean Response	Sum of Response	Variance	Standard Deviation	Item Reliability
1	4.109	226	1.3699	1.1704	0.7224
29	4.382	241	0.5269	0.7259	0.6090
30	4.182	230	1.0942	1.0460	0.6842
32	4.145	228	0.9607	0.9801	0.7052
33	4.218	232	0.5706	0.7554	0.7793
35	4.055	223	1.0334	0.0166	0.5812
36	3.855	212	1.0334	1.0166	0.7608

TABLE XVIII

TEST SUMMARY OF E-TYPE FACTOR IV:
INTERPERSONAL CONTACT

Respondents	Average Score	Variance	Standard Deviation	K-R Factor Reliability
55	28.9454	25.5788	5.2516	0.8769

TABLE XIX

ITEM ANALYSIS VARIABLE SUMMARY OF
REVISED IN SCALE FOR E-TYPE FACTOR V:
LEARNING ENVIRONMENT

Item	Mean Response	Sum of Response	Variance	Standard Deviation	Item Reliability
1	4.109	226	1.3699	1.1704	0.7974
3	3.782	208	1.3706	1.1707	0.4353
4	3.709	204	1.5881	1.2602	0.6634
5	3.818	210	1.3124	1.1456	0.7392
19	4.327	238	0.8383	0.9156	0.4911
20	3.945	217	1.3970	1.1820	0.6938
28	3.945	217	1.1061	1.0517	0.7409
37	3.782	208	1.4797	1.2164	0.6417
45	4.055	223	1.6879	1.2992	0.7309
48	3.855	212	1.2516	1.1187	0.7651
53	3.818	210	1.4579	1.2074	0.7234

TABLE XX

TEST SUMMARY OF E-TYPE FACTOR V:
LEARNING ENVIRONMENT

Respondents	Average Score	Variance	Standard Deviation	K-R Factor Reliability
55	43.1454	88.9243	9.4300	0.9120

As suggested in the computer program on Item Analysis (Johnson et al., 1972), an item and/or questionnaire reliability of 0.3 or higher is acceptable. With fifty-five subjects, the test reliability of the I-Type questions for Factor I calculated to be 0.93, and 0.67 for Factor II. The test reliabilities for the E-Type questions of Factors III, IV, and V, calculated to be 0.58, 0.87, and 0.91, repectively. The IN Scale factors are reliable and valid.

CHAPTER IV

PROCEDURES

Introduction

The purpose of this study was to develop and validate an instrument to measure invitations teacher extend in the classroom to determine the effect on academic achievement. The fifty item IN Scale developed for this study and described in Chapter III differentiated E-Type from I-Type teaching behaviors. The instrument was then applied to an academic environment to determine which type of teacher behavior was most successful in terms of academic achievement and whether the type of curriculum taught by the teacher affected the degree of success of achievement.

The unit of analysis was selected to be teacher behaviors. The independent variable of E-Type and I-Type teaching behaviors, and general and technical education curriculum were investigated to the extent that they correlated with the dependent variable, academic achievement.

Population and Sample

The target population of the study was the faculty and students at a two-year post-secondary technical college in Columbus, Ohio. Columbus Technical Institute is a state-assisted college accredited by the Ohio Board of Regents, State Department of Education, and North Central Association of Colleges and Secondary Schools. It offers programs of instruction in technologies of business, engineering, health, and public services. Each of these technologies are served by a general education division.

Columbus Technical Institute was chosen as the population because of its availability to the researcher and because of diverse curriculum. A two-year technical program has the distinguishing feature of a curriculum that is highly restrictive, directive, and narrow in focus. Technicians must have considerable scientific knowledge of their specialty and are required to be proficient in the manipulation of instruments. In two years, technicians are expected to acquire specific, tangible skills. In contrast, the general education curriculum is a broad, basic foundation for later highly specialized skills. It provides the students with an introduction to the humanities and social sciences, mathematics and basic sciences, and skills in written and oral communications.

Instructors were selected randomly from an entire list of general and technical full-time faculty members. Students within their classes were asked to rate their technical and general education teachers of the previous quarter whose classes were scheduled the earliest hours of the beginning of the week.

Appendix D is a copy of the instrument students used to rate their general and technical education teachers.

Table XXI is a description of the actual sample from which the data were obtained.

TABLE XXI

SOURCES OF SAMPLE FROM WHICH DATA WERE OBTAINED

Curriculum	Sample Size	
General Education		
Communication Skills	27	
Behavioral Sciences	35	
Basic Sciences	9	
Mathematics	4	
Total		75
Technical Education		
Engineering Technologies	6	
Public Services Technologies	24	
Health Technologies	9	
Business Technologies	35	
Total		74

Design of the Study

This study is categorized under the broad heading of descriptive research. It is an associational study which involves analysis by correlation.

Factors that were identified and believed to relate to the dependent variable of academic achievement scores are the independent variables of I-Type and E-Type teacher behaviors, and curriculum.

The literature did not reveal a valid measure of invitational and effective instruction which met the unique requirements of this study. For this reason the investigator developed a Likert-type scale using operationally defined terms from the literature on effective and invitational teachers. The developed scale, described in Chapter III, was subjected to three statistical procedures: content validity, determination of reliability coefficients for each item and overall scale, and scale validity utilizing factor analysis.

To estimate reliability of the scale, the internal consistency utilizing a split-half method was computed with the Spearman-Brown prophecy formula as a correction factor. The advantages of the split-half method are that there need be only one form of the test and one administration to estimate reliability.

To confirm or disconfirm the stated hypotheses, the study utilized three statistical procedures for correlation:

Pearson product-moment correlation, correlation ratio, and point-biserial correlation.

The use of correlation procedures in the social sciences is common. Correlation analysis provides the research with a single summary statistic describing the strength of association between two variables. The strength is indicated by the correlation coefficient. The variables can be independent or dependent, to determine if they are related in a way which would allow them to be combined into a composite scale.

The Pearson product-moment correlation was utilized in those cases where interval data and linear relationships existed.

The investigator used the Statistical Package for the Social Sciences (SPSS) computer program SUBPROGRAM PEARSON CORR: PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS. This program computes zero-order product-moment correlation coefficients which measure the amount of spread about the linear least-squares equation.

Output from this program provides the researcher with the following data:

a. The coefficient
b. The test of significance
c. The number of cases (N) upon which the correlation coefficient was computed, and
d. A matrix of correlations

Correlation ratios were used to compute the relationship between the teacher factor scores with the grades students received in the course. Correlation ratio

is particularly adapted to data that are nonlinear. Data with a curved regression can be analyzed using the correlation ratio. The investigator developed a scatterplot for factor scores and academic achievement. The results of the scattergram suggested that the data were not linear.

The computer program used to compute the correlation ratios was the Statistical Package for the Social Sciences (SPSS) CROSSTABS with the Statistic ETA selected as an option. Of the available output from this program which includes the following list, only the ETA coefficients were utilized:

a. Crosstabulation of all variables
b. ETA coefficients
c. Sums of squares, means, standard deviations and variances for entire population and each variable, and
d. Sample size for entire population and each variable.

Correlation ratios were computed for student reports of grades received, how hard they worked, and how much they learned in the course.

The investigator used the point biserial correlation coefficient in identifying the relationship between general and technical education curriculum with factor scores as the variables were dichotomous (curriculum) and continuous (factor scores) (Popham & Sirotnik, 1973).

The computer program selected to determine coefficients was the POINT BISERIAL UFSPL program from the University of Florida Statistical Program Library. The

program computes the following information for the researcher:

a. Total number of subjects
b. Number of subjects in each group
c. Total means and total sigmas
d. Means and sigmas for each group
e. Point biserial correlation coefficients

The above three statistical procedures, Pearson product, correlation ratio, and point biserial, were implemented to confirm or disconfirm the five hypotheses of the study.

Data and Instrumentation

Students representative of all areas of study reported their perceptions of teacher behaviors on the Likert-type IN Scale developed by the investigator and described in Chapter III.

Fifty statements described characteristics of teacher behaviors. Twenty-six of the items identified the two I-Type factors, while twenty-four identified the three E-Type factors. Invitational I-Type items included the following:

Factor I: Caring
Items 9, 17, 22, 23, 24, 25, 27, 40, 41, 42, 44, 50, 51, 52, 56, 62, 63, 65, 66, and 67.

Factor II: Respect
Items 10, 11, 13, 14, 15, and 64

Effective E-Type items included the following:

Factor III: Course Organization
Items 38, 54, 55, 58, and 59

Factor IV: Interpersonal contact
Items 1, 29, 30, 31, 32, 33, 34, 35, and 36

Factor V: Learning Environment
Items 1, 3, 4, 5, 19, 20, 28, 37, 45, 48, and 53

Method of Analysis

Three statistical procedures tested the five stated hypotheses of Chapter I. The Pearson product-moment correlation coefficients were determined to identify relationships between each factor score. Correlation ratios estimated relationships between factor scores and academic achievement. Achievement was measured by student reports of: (1) grades received, (2) how hard they worked, and (3) how much they learned. Finally, point biserial correlation coefficients were computed to determine the relationship between factor scores and the type of curriculum (general or technical).

CHAPTER V

RESULTS

Introduction

To accomplish the first five objectives identified in Chapter I, the investigator first reviewed the literature and research on characteristics of effective teachers. Sixty-eight items were identified from literature professing to measure traditionally accepted effective teacher behaviors and invitational teacher behaviors.

Expert judges, given a description of E-Type and I-Type teaching, were asked to rank each of the sixty-eight items into one of three categories: E-Type, I-Type or Undecided. Agreement by at least four of the five judges on each item was the first decision as to the determination of E-Type and I-Type variables.

The sixty-eight items were then tested for internal consistency by use of the split-half and Kuder-Richardson technique described in Chapter III. Following the test for internal consistency, the items were subjected to factor analysis which identified five distinctive factors which the investigator labeled caring, respect, learning environment, interpersonal contact and course organization. These factors were again subjected to a second

panel of judges for agreement. Concurrence of six of the seven judges was required to effect the change of an item to a different category. The items were again tested for internal consistency. The procedures resulted in fifty identified items; twenty-six I-Type and twenty-four E-Type descriptions of teacher behaviors.

Data generated by the final instrument was analyzed in terms of meeting the requirements of objectives six through ten. Statistical procedures utilized were Pearson product-moment correlation coefficient computations, correlation ratio coefficient computations, and point biserial coefficient computations.

Pearson Product-Moment Correlation Coefficients

Teacher factor scores were analyzed by Pearson product-moment correlation coefficients (objective six). The investigator utilized the Statistical Package for the Social Sciences (SPSS) computer program SUBPROGRAM PEARSON CORR: PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS. Results of the output are identified in Table XVII below.

TABLE XXII

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1	1.0000	0.6746	0.5637	0.7076	0.7326
Factor 2	0.6746	1.0000	0.5714	0.6087	0.5928
Factor 3	0.5637	0.5714	1.0000	0.5656	0.5866
Factor 4	0.7076	0.6087	0.5656	1.0000	0.7812
Factor 5	0.7326	0.5928	0.5866	0.7812	1.0000

Hypothesis I. There are no relationships among the five teacher factor scores.

There is high correlation between each of the five factor scores with each other. The values of correlation coefficients for this data ranged from 0.56 to 0.78. These correlation coefficients are significant at the .001 level.

These values of correlation coefficients confirm a positive relationship between the tested variables, I-Type and E-Type teacher behaviors, as identified by this instrument.

Appendix F of Downie and Heath (1970) was utilized throughout this analysis to determine the level of significance for the various values of correlation coefficients.

Correlation Ratios

Teacher factor scores were correlated with grades students received, reports of how hard students worked,

and reports of how much students learned (objectives 7, 8, and 9). The Statistical Package for the Social Sciences (SPSS) computer program CROSSTABS provides the Statistic option ETA. This computer program option was used to generate the correlation ratio coefficients. The results of the correlation ratio coefficients of grades, work and learning are located in Tables XXIII, XXIV, and XXV.

TABLE XXIII

CORRELATION RATIO COEFFICIENTS
OF TEACHER FACTOR SCORES WITH STUDENT GRADES

Factors	ETA Coefficient	ETA Coefficient
I: Caring	0.39117	0.68205
II: Respect	0.49765	0.54971
III: Course Organization	0.31452	0.54949
IV: Interpersonal Contact	0.39936	0.51189
V: Learning Environment	0.42753	0.57370

TABLE XXIV

CORRELATION RATIO COEFFICIENTS
OF TEACHER FACTOR SCORES WITH STUDENT REPORTS OF
HOW HARD THEY WORKED

Factors		ETA Coefficient	ETA Coefficient
I:	Caring	0.45871	0.75321
II:	Respect	0.37128	0.49313
III:	Course Organization	0.47128	0.54327
IV:	Interpersonal Contact	0.43120	0.51020
V:	Learning Environment	0.59598	0.65793

TABLE XXV

CORRELATION RATIO COEFFICIENTS
OF TEACHER FACTOR SCORES WITH STUDENT REPORTS OF
HOW MUCH THEY LEARNED

Factors		ETA Coefficient	ETA Coefficient
I:	Caring	0.24198	0.64404
II:	Respect	0.09467	0.42121
III:	Course Organization	0.24086	0.43772
IV:	Interpersonal Contact	0.27967	0.53383
V:	Learning Environment	0.37065	0.55219

Hypothesis II. There are no relationships between teacher factor scores and student grades.

Results of the ETA computer program indicate a high positive correlation between teacher factor scores and student grades.

The range of correlation coefficients for both ETA groupings is 0.31 to 0.68. These values of coefficient are significant at the .01 level and confirm a positive relationship between the tested variables and rejects the stated null hypothesis.

Disconfirmation of hypothesis II would suggest that those students who report high levels of each teacher factor also report a corresponding high grade received in the course.

Conversely, those students who reported receiving high grades in the course also reported correspondingly high factor scores for teacher behaviors.

Hypothesis III. There is no relationship between teacher factor scores and student reports of how hard they worked in the course.

Analysis of data on the tested variables resulted in disconfirming hypothesis III. Correlation coefficients for both groups of ETA values ranged from 0.37 to 0.75. These values are significant at the .001 level and confirm a positive relationship between all factors and student reports.

Those students who report high levels of each teacher

factor also report a correspondingly high account of how hard they worked in the course.

Similarly, those students who reported that they worked hard in the course also reported high levels of each factor of teacher behaviors.

Hypothesis IV. There are no relationships between teacher factor scores and student reports of how much they learned in the course.

Statistical analysis of pertinent data disconfirmed hypothesis IV except for the single case of factor 2, respect.

Correlation coefficients for factor 2, respect, is 0.09 which is not significant and therefore fails to reject the null hypothesis for this case.

All remaining correlation coefficients of both ETA groups ranged from 0.24 which is significant at the .02 level to 0.64 which is significant at .01 level and confirms a positive relationship between the tested variables.

Excepting the case of factor two, those students who report high levels of each teacher's behavior also report a corresponding high account of how much the learned in the course.

Students who reported they learned much in the course also reported a high factor score for teacher behavior.

For the single case of factor 2, respect, in which the null hypothesis was not rejected, those students who reported that they learned much in the course also reported

a low level of perceiving teachers who respected them as individuals.

Point Biserial Correlation Coefficients

The kind of data generated in correlating teacher factor scores with the type of curriculum being taught (objective 10) required the computation of point biserial correlation coefficients. Table XXVI is a summary of the coefficients.

TABLE XXVI

POINT BISERIAL CORRELATION COEFFICIENTS OF TEACHER FACTOR SCORES WITH CURRICULUM: GENERAL AND TECHNICAL

Factors	Point Biserial Correlation Coefficients
I. Caring	0.3051
II. Respect	0.3905
III. Organization of Course	0.1727
IV. Interpersonal Contact	0.3349
V. Learning Environment	0.2969

Hypothesis V. There are no relationships between teacher factor scores and the type of curriculum.

The null hpothesis was rejected for all factors except factor III on the basis of correlation coefficients ranging from 0.29 to 0.39. These values of coefficient are significant at the 0.01 level. Factor III was not significant at the established criterion of .05 level of significance. It should be noted that factor III is significant at the 0.1 level.

The disconfirmation of hypothesis V indicates that students perceive general education teachers higher on both E-Type and I-Type factors than technical education teachers.

CHAPTER VI

CONCLUSIONS

Introduction

The purposes of this study were (1) to develop and validate an instrument to measure student reports of perceived teacher invitations and perceived teacher behaviors traditionally considered effective by authorities, (2) to subject the instrument to statistical procedures for validation, and (3) to correlate identified invitational (I-Type) factors and effective (E-Type) factors with academic achievement, determined by student reports of grades earned, how hard they worked and how much they learned.

Items for the scale were identified from the literature and research on effective and invitational teaching. The instrument was then subjected to expert judges to rate each variable as to the type of teaching behavior.

All items were subjected to item analysis to determine the reliability of the scale by its internal consistency scores. The instrument was then subjected to factor analysis, a second rating by expert judges, and a final test for internal consistency by item analysis. The revised instrument identified five discriminate factors

which the investigator labeled "Caring," "Respect," "Course Organization," "Interpersonal Contact," and "Learning Environment." The first two factors, caring and respect, identified I-Type teacher behaviors. The final three factors, course organization, interpersonal contact, and learning environment, identified E-Type teacher behaviors.

This instrument was the scale used to collect the data, which disconfirmed each of the five hypothesis.

Discussion

Disconfirmation of the first hypothesis that there are no relationships among the five teacher scores indicates to the investigator that I-Type teacher behaviors labeled caring and respect are significantly related to E-Type teacher behaviors regarding course organization, interpersonal contact and the learning environment.

Because these relationships exist it is important that traditional teacher effectiveness criteria (E-Type) be expanded to include the I-Type teacher behaviors.

Disconfirmation of the hypothesis that there are no relationships among the teacher factor scores and academic achievement, identified by grades earned, student reports of how hard they worked and how much they learned, emphasizes the importance of each type of teacher behavior (caring, respect, course organization, interpersonal

contact and learning environment) for student achievement.

A task of each teacher is to create an effective learning environment for students. The IN Scale would be an useful diagnostic instrument to identify student perceptions of teacher behaviors.

The hypothesis stating a lack of relationship between teacher factor scores and type of curriculum was disconfirmed. Students consistently identified general education instructors higher than technical instructors on the teacher behaviors labeled caring, respect, interpersonal contact and learning environment. There was a lack of significant difference between these two curricula with regards to the organization of the course.

This could be accounted for by the perceived need by general education instructors to work harder at presenting the curriculum in an interesting manner and demonstrating concern and respect for students. Technical instructors may perceive the content of their curriculum as very significant, giving less attention to caring, respect, and interpersonal contact with the students.

The research indicates that teachers exhibit behaviors that create environments highly related to academic achievement of their students. The IN Scale identifies five types of teacher behaviors. Because their behaviors are significantly related to academic achievement, the instrument could be used as a diagnostic tool.

Limitations of Study

It needs to be brought to the attention of the reader that this study was based upon a sample of instructors and students at one technical college in Columbus, Ohio. Although technical colleges provide a diverse population that appeared to be ideal for the study, it is not known to what extent this fact limits generalization of the results. This limitation is sufficient to warrant a replication and expansion of the study.

In addition, the criterion variables of effectiveness and invitations are based on theory rather than easily identifiable behaviors. Although the investigator has developed an instrument to identify teacher behaviors, it should be emphasized that the results of this investigation only established the existence of positive relationships between the tested variables. It does not imply that I-Type and E-Type teacher behaviors are causal variables.

Recommendations for Further Research

To date, this is the only research developed to identify teacher behaviors that relate to invitational teaching. Results of this research indicate that the theory may be a significant factor affecting academic achievement of students in post-secondary education.

The first step in further research would be an elaboration and refinement of the Inviting-Nor nviting Scale.

The present scale includes two subscales: effective E-Type and invitational I-Type teacher behaviors. If further research is confined to the invitational theory, then an instrument consisting of invitational teaching behaviors would be helpful.

The traditional measure of academic achievement within the American school system is the four-point grading system with some variations. The investigator included student reports of how hard they worked and how much they learned to help identify achievement. A much more sophisticated measure of academic achievement is advisable for further research. This should address student gains in academic achievement. With the current grade inflation in the colleges it is questionable that the investigator actually measured academic achievement. No account was taken for the grading style of individual instructors. The investigator encourages attention to this issue in future research.

Summary

Volumes of research have been developed for teacher effectivenes. Despite the extensive research on characteristics of effective, successful teachers, skills have rarely been measured with any great degree of accuracy. Further, teachers have been selected, employed, evaluated and promoted or dismissed without clear knowledge of how well they can teach.

The investigator has developed an instrument that identifies five discriminate teacher behaviors that are highly significant in relation to academic achievement. This instrument is a new tool for formative and summative evaluation of teacher behaviors that can be used as a way of assisting teachers for self improvement.

APPENDIX A

DESCRIPTION OF E-TYPE AND I-TYPE TEACHER BEHAVIORS FOR JUDGES TO MAKE DECISIONS

E-Type Teacher Behaviors

Teacher effectiveness has traditionally been associated with teacher behaviors endorsed by authorities in the teaching profession. These behaviors include careful lesson planning, the use of behavioral objectives, the ability to organize the learning environment, the proper application of learning theory, the display of democratic teaching style, the efficient presentation of subject matter, the display of flexibility in the teaching situation, the use of fair and objective evaluation procedures. These behaviors are most likely to be associated with E-Type teachers.

In addition, E-Type teachers are sometimes identified by their effectiveness in producing immediate, short-
n gains in student academic achievement.

I-Type Teacher Behaviors

Invitations consist of all the verbal and nonverbal messages transmitted to students by their school environment and which communicate to them that they are valuable,

autonomous, and able to learn.

The I-Type teacher specializes in invitations. While most teachers send invitations, those sent by I-Type teachers are different. They are based on high positive regard for the autonomy, value and ability of students. The invitations of I-Type teachers are genuine, and they are transmitted with unusual skill, developed to proficiency by practice and experience.

Among the special skills of the I-Type teacher is the ability to send invitations most likely to reach students, the skill of listening with care, and the ability to be authentic with oneself and with students.

APPENDIX B

RESULTS OF COMPETENT JUDGE RATINGS OF ORIGINAL SIXTY-EIGHT ITEMS OF THE IN SCALE

Item	Rater 1 Type	Rater 2 Type	Rater 3 Type	Rater 4 Type	Rater 5 Type	Decision Type
1	E	E	E	E	E	E
2	U	E	I	U	U	U
3	E	E	U	E	E	E
4	E	E	E	E	E	E
5	E	E	E	E	E	E
6	E	U	E	E	E	E
7	I	E	I	U	U	U
8	I	I	I	I	I	I
9	I	I	I	I	I	I
10	I	I	I	I	I	I
11	I	U	I	I	I	I
12	E	U	U	I	U	U
13	U	I	I	I	I	I
14	I	I	I	I	I	I
15	E	I	I	I	I	I
16	U	U	U	I	I	U
17	I	E	E	I	I	U
18	U	U	E	U	U	U
19	E	E	E	E	E	E
20	E	U	E	E	E	E
21	I	U	E	E	U	U
22	I	I	U	I	I	I
23	I	I	I	I	I	I
24	I	I	I	U	I	I
25	E	E	E	U	E	E
26	U	U	I	U	U	U
27	E	E	E	E	E	E
28	E	E	E	E	E	E
29	E	E	E	E	E	E
30	I	E	I	E	E	U
31	E	E	U	U	E	U
32	E	E	U	U	U	U
33	E	E	U	U	U	U
34	E	I	U	U	E	U
35	E	E	U	U	E	U
36	E	E	E	E	U	E
37	E	E	E	E	E	E
38	I	U	I	I	I	I

APPENDIX C

ITEMS OF THE ORIGINAL IN SCALE

1. The teacher treats me with fairness.
2. The teacher treats me with impartiality.
3. The style of teaching in this classroom is democratic.
4. The teacher seems to be evasive rather than responsible.
5. As the situation arises, the teacher seems to be adaptable rather than inflexible.
6. The teacher radiates warmth in the classroom.
7. There is little enthusiasm from this teacher in the classroom.
8. I am treated as though I have the capacity to deal with situations as they arise.
9. I am treated with friendliness and care in the classroom.
10. I am not respected by the teacher.
11. I am not perceived as an important part of the classroom process.
12. I am thought of as dynamic rather than passive.
13. I am treated as though I am trustworthy.
14. I am treated as though I am not dependable.
15. I am treated as though I impede the educational process.
16. The teacher allows me to make my own decisions.
17. The teacher is concerned with my personal development.

18. The teacher is more concerned with immediate problems than past ones.

19. The teacher is knowledgeable in the subject matter.

20. The teacher has not made the information relevant to me.

21. The teacher directs and guides me.

22. The teacher sees me as a co-worker on a common problem.

23. The teacher greatly encourages me.

24. The teacher seldom reassures me.

25. The teacher rarely tries to understand my feelings.

26. The teacher usually maintains rapport with me.

27. The teacher is able to understand my feelings.

28. The teacher gives and takes in the classroom environment.

29. The teacher is hostile toward me.

30. The teacher is rejecting to me.

31. The teacher's own needs interfere with the understanding of me.

32. The teacher is very unpleasant to me.

33. The teacher feels disgusted by me.

34. The teacher is seductive toward me.

35. The teacher is punitive.

36. The teacher cannot maintain rapport with me.

37. The teacher presents the material in an organized, clear, concise manner.

38. The teacher creates an uninteresting classroom environment for me.

39. The teacher simulates in the classroom similar conditions I will experience outside the classroom.

40. The teacher seldom makes personal contact with me in the classroom.

41. If the teacher makes contact with me in the classroom, it is typically brief.

42. The contact the teacher makes with me in the classroom is unemotional.

43. The teacher reprimands misbehavior publicly and punitively to those students who make demands on him/her.

44. The teacher is sincerely interested in me as a student.

45. The teacher is not prepared to teach this course.

46. I am encouraged to assume as much personal responsibility for learning as possible.

47. I communicate with my teacher well.

48. The teacher is easy to understand.

49. The teacher is seldom boring.

50. The teacher knows about me as a person.

51. The teacher encourages my interests and needs.

52. The teacher demonstrates that he/she cares about me by putting his/her imagination into teaching.

53. The teacher demonstrates that he/she puts effort into his/her teaching.

54. No description of objectives are given to me for this course.

55. Testing instruments measure my performance which is not closely related to attaining the objectives.

56. I am actively encouraged to participate in learning the material.

57. Few suggestions are made to me regarding how to achieve.

58. Examples and/or illustrations are rarely provided by the teacher.

59. There is no explanation of grading procedures.

60. Feedback on how well I'm doing is given only once or twice before the end of the quarter.

61. The teacher holds me accountable for my behavior.

62. The teacher respects my decisions.

63. The teacher gives me confidence as a student.

64. The teacher suggests that I don't have the ability even if I had the desire.

65. I can tell the teacher is not genuinely interested in me.

66. The teacher makes me feel like my ideas are important.

67. When I am in the classroom I can almost feel myself becoming more intelligent.

68. I am treated as though I do not have sense enough to follow simple directions.

APPENDIX D

REVISED IN SCALE

Instructions to Students

The following pages contain a number of statements about your teacher. Students will differ in the way they feel about each item. With some, you will strongly agree, with some you will strongly disagree, and on some you will be in between. There are no right answers. To indicate your level of agreement or disagreement, put an "X" in the box which best represents your answer.

Please read each statement and refer to the scale "a" through "e." Be sure to answer every item.

Thank you for your cooperation.